

**A***udit*

**R***eport*



AIR FORCE LOGISTICS YEAR 2000  
END-TO-END TEST PLANNING

Report No. 00-021

October 26, 1999

Office of the Inspector General  
Department of Defense

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### **Acronyms**

CINC	Commander in Chief
DLA	Defense Logistics Agency
DUSD(L)	Deputy Under Secretary of Defense (Logistics)
IAWG	Interface Assessment Working Group
PSA	Principal Staff Assistant
Y2K	Year 2000



INSPECTOR GENERAL  
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October 26, 1999

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE  
(LOGISTICS)  
ASSISTANT SECRETARY OF THE AIR FORCE  
(FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Audit Report on Air Force Logistics Year 2000 End-to-End Test Planning  
(Report No. 00-021)

We are providing this report for review and comment. We considered management comments on a draft of this report when preparing the final report.

DoD Directive 7650.3 requires that all recommendations be resolved promptly, and there is special urgency regarding year 2000 conversion issues. Comments from the Air Force were partially responsive. As a result of Air Force comments, we revised Recommendation 3. to clarify the intent of the recommendation. Therefore, we request that the Air Force provide additional comments on Recommendation 3. by November 16, 1999.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Tilghman Schraden at (703) 604-9186 (DSN 664-9186) (tschraden@dodig.osd.mil) or Mr. Joseph M. Austin at (703) 604-9178 (DSN 664-9178) (jaustin@dodig.osd.mil). See Appendix B for the report distribution. Audit team members are listed inside the back cover.

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## Office of the Inspector General, DoD

Report No. 00-021

(Project No. 9LD-9024.02)

October 26, 1999

### Air Force Logistics Year 2000 End-to-End Test Planning

#### Executive Summary

**Introduction.** This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the year 2000 (Y2K) computing challenge. For a complete listing of audit projects addressing the issue, see the Y2K web pages on the IGnet at <http://www.ignet.gov>.

The DoD Year 2000 Management Plan (DoD Management Plan) assigns responsibility to the Principal Staff Assistants (PSAs) for ensuring the end-to-end functional process flows that support their functional area are assessed either in a Joint Staff or commander in chief Y2K operational evaluation, a Service-sponsored system integration test, or a functional area Y2K end-to-end test. The PSAs are also responsible for planning, executing, and evaluating all mission-critical systems not otherwise tested and ensuring that processes that fall within their purview are evaluated. The Deputy Under Secretary of Defense (Logistics) (DUSD[L]) acts on behalf of the Under Secretary of Defense for Acquisition and Technology, the PSA for logistics, in performing those functions for the logistics functional area. Logistics end-to-end test planning was accomplished through the "Logistics Capstone Operational Assessment Plan for Year 2000" (Logistics Capstone Plan).

Logistics functional end-to-end testing was divided into three phases. Level I was intra-Component testing, and Level II was inter-Component testing. Level III testing was to be conducted as required to perform retesting. The DUSD(L) provided oversight for Level II testing while delegating responsibility for execution of Level I testing to the Components. Level II testing began on May 25, 1999, and was completed on July 14, 1999. The Joint Interoperability Test Command concluded in a working draft report, "Logistics Year 2000 End-to-End Level II Exercise Evaluation Report," September 1999, that the mission-critical logistics processes will continue unaffected by Y2K-related issues and that the logistics automated information systems will operate as a whole to support the five mission-critical logistics processes. DUSD(L) representatives stated that Level III testing would not be required because of the successful demonstration of Y2K capabilities by the logistics systems participating in the test of the five mission-critical logistics processes.

**Objective.** The audit objective was to evaluate the effectiveness of the Y2K end-to-end tests planned for the logistics functional area. This report, the second in a series on logistics end-to-end testing, addresses the overall Level II end-to-end test planning accomplished by the Air Force.

**Results.** The Air Force end-to-end test planning for mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. In response to the practical limitations imposed by resource constraints and calendar time remaining, the core logistics processes and data flows were

prioritized, based on their criticality to the warfighter, to determine which to include in testing. Five critical core logistics processes were identified for testing (requisition, shipment, receipt, inventory control, and asset status); the Air Force participated in four. The Air Force did not participate in end-to-end testing of the shipment process because the Air Force does not initiate shipment transactions. The Air Force included five mission-critical Air Force systems in the Level II testing. Also, the Air Force did plan to perform the verification and validation of 100 percent of mission-critical code. However, the Air Force did not accurately track and report three mission-critical systems subject to higher level tests. Also, the Air Force missed an opportunity to test contingency plans for mission-critical systems during Level II end-to-end testing. Further, the Air Force did not document the risk assessment and mitigation plans for core logistics processes. As a result, there was reduced assurance that all mission-critical logistics systems and contingency plans will be tested as required. In addition, the Air Force is assuming greater risk that effective workarounds may not be in place to ensure the continuity of critical logistics processes in the event of a Y2K disruption. See the Finding section for details.

**Summary of Recommendations.** We recommend that the Chief Information Officer, Department of the Air Force, ensure that contingency plans for the mission-critical systems included in logistics Level II end-to-end testing are tested. We also recommend that the Chief Information Officer determine the status of the mission-critical logistics systems that have not had required testing, test them as required, and update the DoD Y2K Reporting Database and the Air Force Evaluation Database, as appropriate. Additionally, we recommend that the Chief Information Officer ensure that a risk management plan for the Air Force core logistics processes be developed and provided to the DUSD(L) for inclusion in the overall DoD risk management plan.

**Management Comments.** The Air Force concurred with the recommendations to test contingency plans for systems that were included in Level II end-to-end testing and to determine the status of three mission-critical systems that had not had higher level testing. The Air Force stated that it tested contingency plans during the Joint Chiefs of Staff Contingency Assessment Positive Response Y2K-4 exercise. The Air Force further stated that there appeared to be a "time lag" mismatch between the DoD Y2K Reporting Database and the Air Force Evaluation Database for the three systems that did not have higher level testing. The Air Force reclassified two of the systems and they are no longer reported as mission-critical logistics systems in the DoD Y2K Reporting Database. The remaining system was added to the Air Force Evaluation Database. The Air Force nonconcurred with the recommendation to develop a risk management plan for core logistics processes. The Air Force stated that, according to the Logistics Capstone Plan, responsibility for developing the risk management plan was assigned to the Operational Test Coordinator within the Office of the DUSD(L). A discussion of management comments is in the Finding section of the report and the complete text is in the Management Comments section.

**Audit Response.** Air Force comments were not fully responsive. The Chief Information Officer, Department of the Air Force, should ensure the development of a risk management plan for Air Force core logistics processes for the DUSD(L) to include in the overall risk management plan. We revised the recommendation to clarify its intent, and we request that the Air Force provide comments on the final report by November 16, 1999.

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## Background

**Executive Order.** Because of the potential failure of computers to function throughout the Government, the President issued Executive Order 13073, "Year 2000 Conversion," February 4, 1998, making it policy that Federal agencies ensure that no critical Federal program experiences disruption because of the year 2000 (Y2K) problem. The order requires that the head of each agency ensure that efforts to address the Y2K problem receive the highest priority attention in the agency.

**Public Law.** Public Law 105-261, "National Defense Authorization Act for Fiscal Year 1999," October 17, 1998, Section 334(b), directs that the Secretary of Defense ensure that "all mission critical systems that are expected to be used if the Armed Forces are involved in a conflict in a major theater of war are tested in at least two exercises." In addition, Section 334(d) states: "Alternative Testing Method. In the case of an information technology or national security system for which a simulated year 2000 test as part of a military exercise described in subsection (c) is not feasible or presents undue risk, the Secretary of Defense shall test the system using a functional end-to-end test or through a Defense Major Range and Test Facility Base."

**DoD Y2K Management Strategy.** In his role as the DoD Chief Information Officer, the Senior Civilian Official, Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), issued the "DoD Year 2000 Management Plan, Version 2.0" (DoD Management Plan) in December 1998. The DoD Management Plan required DoD Components to implement a five-phase (awareness, assessment, renovation, validation, and implementation) Y2K management process to be completed by December 31, 1998, for mission-critical systems.

The DoD Management Plan also provides guidance for implementing the Deputy Secretary of Defense memorandum, "Year 2000 (Y2K) Verification of National Security Capabilities," August 24, 1998, that requires that each Principal Staff Assistant (PSA) of the Office of the Secretary of Defense "verify that all functions under his or her purview will continue unaffected by Y2K issues." That verification was to be performed after completion of the five-phase management approach that culminated with completion of the implementation phase, December 31, 1998. That further testing, to be conducted during the first half of 1999, was planned and conducted from a mission perspective rather than a system perspective and would increase the confidence that any errors or omissions in system remediation would be found. The Deputy Under Secretary of Defense (Logistics) (DUSD[L]) acts on behalf of the Under Secretary of Defense for Acquisition and Technology, the PSA for logistics.

**DoD Logistics End-to-End Planning.** The DUSD(L) implemented and executed key components of the DoD Management Plan in his efforts to adequately plan for and manage logistics functional end-to-end testing. Test planning was accomplished through the "Logistics Capstone Operational Assessment Plan for Year 2000" (Logistics Capstone Plan), dated October 30,

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1998, and approved in November 1998. The Logistics Capstone Plan provided the overall strategy for conduct of the logistics end-to-end testing and was coordinated with the Services, the Defense Logistics Agency (DLA), the Joint Interoperability Test Command, and the Joint Staff. The October 1998 Logistics Capstone Plan was updated in February 1999 and again in May 1999 to reflect evolving schedules and processes. Its name was changed to "Logistics Capstone Plan for Year 2000 End-to-End Test" as part of the February update. In this report, unless otherwise noted, Logistics Capstone Plan refers to the May 20, 1999, version.

## **Objective**

The audit objective was to evaluate the effectiveness of the Y2K end-to-end tests planned for the logistics functional area. This report, the second in a series on logistics end-to-end testing, addresses the overall Level II end-to-end test planning accomplished by the Air Force. See Appendix A for a discussion of the audit scope and methodology and a summary of prior coverage.



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## Air Force Planning for Logistics Functional End-to-End Testing

The Air Force end-to-end test planning for mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. In response to the practical limitations imposed by resource constraints and calendar time remaining, the Air Force and the other Services, in conjunction with the Logistics Interface Assessment Working Group (IAWG),<sup>1</sup> the DUSD(L), and DLA, prioritized the core logistics processes and data flows, based on criticality to the warfighter, to determine which to include in testing. They identified five critical core logistics processes for testing; the Air Force participated in four of the five processes tested. The Air Force included five mission-critical Air Force systems in the Level II testing. Also, the Air Force did plan to perform the verification and validation of 100 percent of mission-critical code. However, the Air Force did not accurately track and report all mission-critical systems subject to higher level tests. Also, the Air Force missed an opportunity to test contingency plans for mission-critical systems during Level II end-to-end testing. Further, the Air Force did not document the risk assessment and mitigation plans for core logistics processes. As a result, there was reduced assurance that all mission-critical logistics systems and contingency plans will be tested as required. In addition, the Air Force is assuming greater risk that effective workarounds may not be in place to ensure the continuity of critical logistics processes in the event of a Y2K disruption.

### Air Force Guidance

**Test Plans.** The Logistics Capstone Plan provided the overall strategy for conduct of the DoD logistics end-to-end testing. The Air Force implemented the Logistics Capstone Plan with the issuance of the "U.S. Air Force Logistics Year 2000 Level II End-to-End Test Plan" (the Air Force Level II Test Plan), version 3.6.3, June 8, 1999. The Air Force Level II Test Plan defines the Air Force strategy for its participation in the logistics end-to-end testing.

**Air Force Test Responsibilities.** The Air Force Central Design Activities at the Materiel Systems Group, Wright-Patterson Air Force Base, Ohio; the Standard Systems Group, Maxwell Air Force Base-Gunter Annex, Alabama; the Defense Megacenter, Oklahoma City, Oklahoma; and the Regional Support Areas at Montgomery, Alabama, and Wright-Patterson Air Force Base were

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<sup>1</sup>The Logistics IAWG membership was composed of DoD Component representatives and was chaired by the Director, Logistics Systems Modernization.

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responsible for conducting Level II testing of mission-critical thin lines.<sup>2</sup> Additionally, DLA and the other Services are required to interface at various points along the mission-critical thin lines. Functional subject matter experts, computer programmers, and regional support area personnel are responsible for performing Level II testing.

## **Air Force Planning for End-to-End Testing**

The Air Force end-to-end test planning for mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan and the Logistics Capstone Plan. The overall objective of Air Force participation in the DoD logistics end-to-end test effort was to determine whether Air Force critical systems could interface correctly with other DoD systems in a Y2K environment. The specific objective was to verify information flows to and from each Service Component and DLA. As required by the Logistics Capstone Plan, the Air Force Level II Test Plan addressed areas such as end-to-end test strategy, critical core processes, mission-critical systems that supported the core processes, and test limitations.

Air Force Level II end-to-end testing of its mission-critical processes and systems began on May 25, 1999, and was completed on July 14, 1999. The Joint Interoperability Test Command concluded in a working draft report, "Logistics Year 2000 End-to-End Level II Exercise Evaluation Report," September 1999, that the mission-critical logistics processes will continue unaffected by Y2K-related issues and that the logistics automated information systems will operate as a whole to support the five mission-critical logistics processes.

**Testing Strategy.** The Logistics Capstone Plan defines three levels of testing and delegates responsibility for each. The multilevel test approach consisted of intra-Component events (Level I), inter-Component events (Level II), and post-test activities that include retest (Level III). Level I tests were designed to ensure processes and systems within a Component's organizational boundaries are Y2K ready. Level II testing was to verify mission-critical processes and information flows that involve more than a single Component are Y2K ready. The execution and oversight of the Level I testing was delegated to the Components while DUSD(L) focused on the Level II testing and post-test events, such as retest, during Level III. Independent validation and verification of Level II testing was achieved through the use of the Joint Interoperability Test Command for test planning, execution, and reporting. The Air Force incorporated the guidelines from the Logistics Capstone Plan into the Air Force Level II Test Plan.

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<sup>2</sup>Thin lines refer to the minimum automated systems required to support the performance of mission-critical processes.

**Core Processes.** The Air Force and the other Services, in conjunction with the IAWG, the DUSD(L), and DLA, agreed that all mission-critical systems and processes could not be assessed during the logistics functional Level II end-to-end testing because of time and resource constraints. They identified 8 out of 15 core supply and materiel management processes as mission-critical to the warfighter. The eight mission-critical processes were further refined to reflect five mission-critical processes to be included in the Level II end-to-end testing. The narrow focus for Level II logistics end-to-end testing was to assess mission-critical processes for functions that would impair a warfighting mission within hours or days of being needed and not available. The five core processes were requisition, shipment, receipt, inventory control, and asset status. The Air Force participated in four of the five core processes tested during Level II end-to-end testing. The Air Force did not participate in end-to-end testing of the shipment process because the Air Force does not initiate shipment transactions. The general approach taken by the Air Force, the other Services, and DLA was to identify critical functional processes and then identify the information systems that supported those processes. The Air Force identified five mission-critical systems that it used to support the five mission-critical logistics processes selected for testing. The following table provides a list of those systems and shows their relationships to the processes to be included in Level II end-to-end testing. The Air Force did not test the asset status process separately because it was part of the other processes.

Air Force Level II Testing					
System	Process				
	Retail Requisition	Wholesale Requisition	Ammunition Requisition	Receipt	Inventory
AISG		X	X	X	X
CAS(A)			X		
IMWRP	X			X	X
SBSS	X				
WRRS		X			
AISG	Automated Intersite Gateway (a communications system)				
CAS(A)	Combat Ammunition System (Air Logistics Center)				
IMWRP	Item Manager Wholesale Requisition Process				
SBSS	Air Force Standard Base Supply System				
WRRS	Wholesale and Retail Receiving and Shipping				

**Test Limitations.** Because all logistics processes and mission-critical system interfaces could not be tested within the time available, the Air Force limited its testing in several areas, as described in the following paragraphs.

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**Test Environment.** The Air Force Level II end-to-end testing was to ensure interoperability in Y2K environments of mission-critical system interfaces. Testing included all files, interface control documents, and support utilities needed to validate the Logistics Capstone Plan. Level II end-to-end testing was to ensure that:

- Y2K platforms met or exceeded the performance of the current operating environments without change to the system functionality,
- all program support utilities functioned properly in the new Y2K environment,
- uploads and downloads of data were uninhibited by date rollover, and
- extending due diligence tests increased levels of confidence in the logistics systems.

The limitations in the Air Force test environment are as follows.

- System testing will not validate the support utility programs.
- Tests will not be conducted in production environments<sup>3</sup> but will use representative test environments.
- The representative test environments have less memory capabilities than the production environments.
- Testing is not an uninterrupted end-to-end test. Because the test environment could not be configured to simulate all systems at one time, the test will be configured to simulate each system sequentially.

**Date Crossings.** Level II testing was to include date crossings for fiscal year (September 30, 1999, to October 1, 1999), calendar year (December 31, 1999, to January 1, 2000), and leap day (February 28, 2000, to February 29, 2000, and February 29, 2000, to March 1, 2000). A baseline test was to be completed to compare current data with test results.

**Transactions.** The Air Force limited the number and type of transactions to be included in Level II end-to-end testing. The Air Force selected supply transactions for electronics and munitions items for end-to-end testing. The transactions included 39 Air Force national stock numbers. The national stock numbers were to be tested at the retail and wholesale levels. Level II end-to-end testing confirms accurate transmission of data from the Air Force to the other Services and DLA.

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<sup>3</sup>Production environments are the environments in which software applications operate on a day-to-day basis.

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## Testing Status of Mission-Critical Systems

The Air Force did not accurately track and report all mission-critical systems subject to higher level tests. The Air Force could not readily determine the testing status of three mission-critical logistics systems because the Air Force Evaluation Database did not accurately reflect the testing status of all systems contained in the DoD Y2K Reporting Database. As a result, the Air Force was not in compliance with the DoD Management Plan.

The DoD Management Plan requires DoD Components to gather and maintain a Y2K database. The DoD Y2K Reporting Database is the single official source to support senior DoD management and for reporting all mission-critical systems to the Office of Management and Budget. The DoD Y2K Reporting Database is used to identify mission-critical systems, their Y2K status, and which phase of the five-phase Y2K management process they are in.

**Monitoring the Status of Mission-Critical Systems.** The Air Force Evaluation Database did not accurately reflect the testing status of all Air Force mission-critical systems. The Air Force Evaluation Database is a key tool of the Air Force Y2K Program Office for ensuring that Air Force tasks and systems are properly evaluated to ensure mission continuity and compliance with public law and the DoD Management Plan. The Air Force Evaluation Database, established and maintained by the Air Force Y2K Program Office, is used for analyzing, managing, and reporting the Y2K status of all mission-critical systems within the Air Force. It contains data on all Air Force Y2K operational assessments, Y2K operational demonstrations, functional end-to-end tests, and Air Force efforts in connection with Joint Staff and commander in chief operational evaluations.

To ensure testing had been conducted or planned for all mission-critical logistics systems as required by the DoD Management Plan, we reconciled mission-critical logistics systems contained in the DoD Y2K Reporting Database with those listed in the Air Force Evaluation Database. As of July 8, 1999, the DoD Y2K Reporting Database contained 39 Air Force mission-critical logistics systems. According to the Air Force Evaluation Database, 36 of the 39 mission-critical systems had been or were planned to be evaluated.<sup>4</sup> The Air Force Evaluation Database did not contain any data on the three remaining systems. The testing status of those three mission-critical systems was not readily apparent and Air Force officials stated there was no plan for testing them. The three systems are described in the following paragraphs.

### **Embedded Global Positioning System/Inertial Navigation System.**

The Embedded Global Positioning System/Inertial Navigation System is a joint tri-Service program that incorporates a global positioning system receiver on a

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<sup>4</sup>26 in Level I (including 4 that were also in Level II and 14 in operational evaluations); 10 in, or planned to be in, operational evaluations or a Service-sponsored system integration test.

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circuit card within the chassis of an inertial navigation unit. That allows the blended navigation solution to gain aiding information from less than ideal satellite reception.

**Global Air Transportation Execution System.** The Global Air Transportation Execution System is a migration system designed to establish an integrated system within the Air Mobility Command that will support the U.S. Transportation Command's 2010 automation plan. It provides intransit visibility for air movement of both passengers and cargo through the Global Transportation Network.

**Improved Maintenance Management Program.** The Improved Maintenance Management Program is a management system that stores all maintenance data actions, maintenance schedules, and equipment status.

Subsequent to the issuance of the draft audit report both the Embedded Global Positioning System/Inertial Navigation System and the Improved Maintenance Management Program were removed from the DoD Y2K Reporting Database. Air Force planning officials stated the systems were removed because the Embedded Global Positioning System/Inertial Navigation System was changed from a logistics to a weapon system, and that the Improved Maintenance Management Program was no longer mission critical but mission essential. In addition, Air Force planning officials stated that the Global Air Transportation Execution System was still under development and was scheduled to be tested on October 11, 1999.

## Contingency Planning

Contingency plans for the five Air Force mission-critical systems involved in end-to-end testing were not exercised or tested during Level II testing. The Logistics Capstone Plan requires that all thin-line systems supporting the identified mission-critical functions have an effective contingency plan. In addition, the Logistics Capstone Plan states that the contingency plans must be developed and validated by operators, must be resourced, and must be tested. Further, the Logistics Capstone Plan states that contingency test plans should address the test objectives, test approach, required equipment and resources, necessary personnel, schedules and locations, test procedures, expected results, and exit criteria. The DoD Management Plan established an initial target completion date of March 31, 1999, for operational contingency plans and June 30, 1999, for exercising those contingency plans. However, the Logistics Capstone Plan extended the target completion date for testing of individual contingency plans to September 1, 1999.

Contingency plans for the five Air Force mission-critical systems involved in logistics end-to-end testing were not exercised during Level II end-to-end testing. Although the Air Force developed contingency plans for its five mission-critical systems included in Level II end-to-end testing, they were not exercised or tested prior to the DoD Management Plan target date of June 30, 1999. The Air Force submitted those contingency plans to DUSD(L) for review in July 1999. DUSD(L) officials stated that contingency plans were only to be

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exercised or tested during Level II testing if there was a significant Y2K-related problem. Consequently, the Air Force did not include tests of contingency plans and has reduced assurance that mission-critical logistics processes and systems will not be adversely affected by Y2K disruptions. As of August 9, 1999, the Air Force had not tested the contingency plans for those five mission-critical systems included in Level II testing. To reduce the risk that Y2K-related failures will impair mission capabilities, the Air Force needs to test contingency plans for mission-critical systems involved in logistics end-to-end testing to ensure that adequate workarounds are in place in the event of a Y2K-related system failure.

## **Measures to Minimize Risk of Y2K-Related System Failures**

**Risk Assessments.** The Air Force did not document the risk assessments performed during the process of prioritizing logistics processes for inclusion in end-to-end testing as required by the DoD Management Plan. The DoD Management Plan states that the Y2K event master planning sessions were to identify and prioritize core processes and perform risk assessments. The Logistics Capstone Plan identified four general categories of corporate-level risk: scope of testing; test environment; scheduling; and funding. It also assigned each category a risk rating of high, medium, or low, based on probability of occurrence and consequences of occurrence, as well as listed the mitigation of a particular risk. The Logistics Capstone Plan stated that the discussion of corporate-level risks was an initial risk assessment. In addition, the Logistics Capstone Plan stated that a complete risk mitigation plan will be incorporated in an overall risk management plan. The DUSD(L) was planning to complete a risk management plan on all core processes by September 1999. We determined that the Air Force Level II Test Plan did not include guidance on preparing or submitting a risk management plan to the DUSD(L) for the Air Force core logistics processes and systems. As a result, as of August 9, 1999, the Air Force had not completed a risk management plan for review and inclusion in the overall DUSD(L) risk management plan. Therefore, the DUSD(L) did not have sufficient information to complete a risk management plan for all core logistics processes by September 1999, and may not be able to meet the revised goal of early November 1999.

**Additional Air Force Measures to Mitigate Risk.** In addition to participating in end-to-end testing of the identified critical core logistics processes, the Air Force Chief Information Officer took steps to minimize risk of critical logistics processes not functioning in a Y2K environment by issuing policy guidance on independent validation and verification of automated information systems.

The Air Force policy requires that 100 percent of the code that impacts mission-critical processes be scanned using two code scanning tools. The goal of this

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additional measure is to identify as many undiscovered date-related problems as possible that are contained in Air Force software applications so they can be resolved before experiencing a Y2K-related system failure.

The code scanning effort initiated by the Air Force should assist in uncovering remaining Y2K-related errors, as well as providing system managers the opportunity to validate and fix those errors, and retest systems as needed. We were advised by Air Force officials that scanning of code that impacts mission-critical automated information systems is an ongoing effort.

## Conclusion

The Air Force generally complied with the DoD Management Plan and the Logistics Capstone Plan in its efforts to plan and manage its portion of the logistics Level II end-to-end testing. Although 15 core logistics processes were identified during the DoD planning process, the Air Force only participated in 4 of the 5 core processes that were included in Level II end-to-end testing. Planning officials acknowledged that constraints of time and resources played a role in limiting the number of processes tested; however, limiting Level II testing to four core processes presents some risk that other Air Force processes will not be adequately tested. Plans must be put in place to mitigate risk of not testing core processes. In addition, the Air Force needs to test contingency plans for systems included in Level II testing and conduct tests of all mission-critical systems that have not been tested or identified for testing.

## Recommendations, Management Comments, and Audit Response

**Revised Recommendation.** As a result of comments from the Air Force, we revised Recommendation 3.

**We recommend that the Chief Information Officer, Department of the Air Force:**

- 1. Ensure that contingency plans for the mission-critical systems that were included in logistics Level II end-to-end testing are tested.**

**Air Force Comments.** The Air Force concurred, stating that it used the Chairman of the Joint Chiefs of Staff Contingency Assessment Positive Response Y2K-4 exercise, which was the Contingency Sustainment Exercise, to test contingency plans for those systems that participated in the logistics Level II end-to-end tests. The exercise was conducted from August 30, 1999, through September 3, 1999.



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**2. Determine the status of the three mission-critical logistics systems that have not had higher level tests, test them as required, and update the DoD Year 2000 Reporting Database and the Air Force Evaluation Database, as appropriate.**

**Air Force Comments.** The Air Force concurred, stating that there appeared to be a "time lag" mismatch between the DoD Y2K Reporting Database and the Air Force Evaluation Database for the three systems that did not have a higher level test. The Air Force further stated that it changed the functionality of the Embedded Global Positioning System/Inertial Navigation System from logistics to weapon system and the system is not date cognizant and does not need to be tested. That system is no longer entered in the DoD Y2K Reporting Database as a mission-critical logistics system. The Global Air Transportation Execution System was under development and was scheduled to be completed September 24, 1999. The system was added to the Air Force Evaluation Database and was scheduled to be tested on October 11, 1999, in an operational evaluation. The Improved Maintenance Management Program was reclassified as not mission critical and is no longer required to have higher level testing. That system is no longer entered in the DoD Y2K Reporting Database as a mission-critical logistics system.

**3. Ensure that a risk management plan that includes a risk assessment and mitigation plan for each of the Air Force core logistics processes be developed and provided to the Deputy Under Secretary of Defense (Logistics) for inclusion in the overall DoD risk management plan. The Air Force risk management plan should be based on probability of occurrence and consequences of occurrence, and list the mitigation for a particular risk.**

**Air Force Comments.** The Air Force nonconcurred, stating that the Logistics Capstone Plan, prepared by the DUSD(L), assigns responsibility for the development of the risk management plan to the Operational Test Coordinator within the Office of the DUSD(L). The Air Force further stated that the DUSD(L) estimated that the risk management plan would be in place November 1, 1999.

**Audit Response.** The Air Force comments are not responsive. The Air Force has the responsibility of identifying its core logistics processes, assessing the risks associated with those processes, and developing a mitigation strategy for the risks affecting Air Force logistics functional areas. The Air Force should develop a risk management plan for its core logistics processes that is coordinated and provided to the Office of the DUSD(L) for inclusion in the overall DoD risk management plan. The Air Force appears to have misunderstood the intent of the recommendation; therefore, we revised the recommendation to clarify our position. We request that the Air Force provide additional comments on the revised recommendation in response to the final report.

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## Appendix A. Audit Process

This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge. For a listing of audit projects addressing the issue, see the Y2K web pages on IGnet at <http://www.ignet.gov>.

### Scope and Methodology

**Work Performed.** We reviewed the Y2K test planning efforts of the Air Force for the logistics functional end-to-end testing. We evaluated the Y2K planning efforts of the Air Force and compared those efforts with the criteria contained in the DoD Management Plan and the Logistics Capstone Plan. We reviewed Public Law 105-261, Section 334; the Deputy Secretary of Defense memorandum of August 24, 1998; the DoD Management Plan; the Logistics Capstone Plan; the Air Force Level II Test Plan; and other guidance regarding the testing of mission-critical logistics systems. Documents reviewed were dated from August 1998 through June 1999. We interviewed personnel within the Offices of the DUSD(L), the Air Force Deputy Chief of Staff for Installations and Logistics, and the Air Force Y2K Program Office. We also interviewed contractor representatives involved with end-to-end testing.

**Limitations to Scope.** Our review was limited to test planning accomplished by the Air Force for Level II logistics end-to-end testing.

**DoD-Wide Corporate-Level Goals.** In response to the Government Performance and Results Act, DoD established 2 DoD-wide goals and 7 subordinate performance goals. This report pertains to achievement of the following goal (and subordinate performance goal):

**Goal 2:** Prepare now for an uncertain future by pursuing a focused modernization effort that maintains U.S. qualitative superiority in key warfighting capabilities. Transform the force by exploiting the Revolution in Military Affairs, and reengineer the Department to achieve a 21st century infrastructure. **Performance Goal 2.2:** Transform U.S. military forces for the future. (00-DoD-2.2)

**DoD Functional Area Reform Goals.** Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following objectives and goals in the Information Technology Management Functional Area:

- **Objective:** Become a mission partner. **Goal:** Serve mission information users as customers. (ITM-1.2)
- **Objective:** Provide services that satisfy customer information needs. Modernize and integrate Defense information infrastructure. (ITM-2.2)

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- **Objective:** Provide services that satisfy customer information needs.  
**Goal:** Upgrade technology base. (ITM-2.3)

**High-Risk Area.** In its identification of risk areas, the General Accounting Office has specifically designated risk in resolution of the Y2K problem as high. This report provides coverage of that problem and of the overall Information Management and Technology high-risk area.

**Audit Type, Dates, and Standards.** We performed this program audit from June through August 1999 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We did not use computer-processed data for this audit.

**Contacts During the Audit.** We visited or contacted individuals and organizations within DoD. Further details are available on request.

**Management Control Program.** We did not review the management control program related to the overall audit objective because DoD recognized the Y2K issue as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

## Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. General Accounting Office reports can be accessed over the Internet at <http://www.gao.gov>. Inspector General, DoD, reports can be accessed over the Internet at <http://www.dodig.osd.mil>. The reports most relevant to the subject matter of this report are listed below.

### General Accounting Office

General Accounting Office Report No. GAO/AIMD-99-172 (OSD Case No. 1323), "Defense Computers: Management Controls Are Critical to Effective Year 2000 Testing," June 30, 1999.

### Inspector General, DoD

Inspector General, DoD, Report No. 00-002, "Year 2000 End-to-End Testing: Logistics Capstone Plan," October 1, 1999.

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## **Appendix B. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology  
Deputy Under Secretary of Defense (Logistics)  
Director, Defense Logistics Studies Information Exchange  
Under Secretary of Defense (Comptroller)  
Deputy Chief Financial Officer  
Deputy Comptroller (Program/Budget)  
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)  
Deputy Chief Information Officer and Deputy Assistant Secretary of Defense (Chief Information Officer Policy and Implementation)  
Principal Director for Year 2000

### **Joint Staff**

Director, Joint Staff

### **Department of the Army**

Chief Information Officer, Army  
Auditor General, Department of the Army  
Inspector General, Department of the Army

### **Department of the Navy**

Assistant Secretary of the Navy (Financial Management and Comptroller)  
Chief Information Officer, Navy  
Auditor General, Department of the Navy  
Inspector General, Department of the Navy  
Inspector General, Marine Corps

### **Department of the Air Force**

Assistant Secretary of the Air Force (Financial Management and Comptroller)  
Chief Information Officer, Air Force  
Auditor General, Department of the Air Force  
Inspector General, Department of the Air Force

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## **Unified Commands**

Commander in Chief, U.S. European Command  
Commander in Chief, U.S. Pacific Command  
Commander in Chief, U.S. Central Command  
Commander in Chief, U.S. Transportation Command  
Commander, Military Traffic Management Command

## **Other Defense Organizations**

Director, Defense Contract Audit Agency  
Chief Information Officer, Defense Contract Audit Agency  
Director, Defense Information Systems Agency  
Inspector General, Defense Information Systems Agency  
Chief Information Officer, Defense Information Systems Agency  
Director, Defense Logistics Agency  
Chief Information Officer, Defense Logistics Agency  
Director, National Security Agency  
Inspector General, National Security Agency  
Inspector General, Defense Intelligence Agency  
Inspector General, National Imagery and Mapping Agency  
Inspector General, National Reconnaissance Office

## **Non-Defense Federal Organizations and Individuals**

Office of Management and Budget  
Office of Information and Regulatory Affairs  
National Security Division Special Projects Branch  
Federal Chief Information Officers Council  
General Accounting Office  
National Security and International Affairs Division  
Technical Information Center  
Accounting and Information Management Division  
Director, Defense Information and Financial Management Systems

## **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Governmental Affairs  
Senate Special Committee on the Year 2000 Technology Problem  
House Committee on Appropriations  
House Subcommittee on Defense, Committee on Appropriations  
House Committee on Armed Services  
House Committee on Government Reform

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## **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member (cont'd)**

House Subcommittee on Government Management, Information, and Technology,  
Committee on Government Reform

House Subcommittee on National Security, Veterans Affairs, and International  
Relations, Committee on Government Reform

House Subcommittee on Technology, Committee on Science

# Department of the Air Force Comments



Chief Information Officer

## DEPARTMENT OF THE AIR FORCE WASHINGTON DC

27 SEP 1999


### MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING OFFICE OF THE INSPECTOR GENERAL DEPARTMENT OF DEFENSE

FROM: DEP CIO  
1250 Air Force Pentagon  
Washington DC 20330-1250

SUBJECT: DoD Draft Audit Report, Air Force Logistics Year 2000 End-to-End Test Planning  
(Project 9LD-9024.02)

This is in reply to your memorandum requesting the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide Air Force comments on subject report.

We concur with comments on recommendations one and two and nonconcur with recommendation three, see attachment. My point of contact is Mr. Arthur Marquardt, AFY2KO, at (703) 602-2297

  
WILLIAM J. DONAHUE, Lt Gen, USAF  
Deputy Chief Information Officer

Attachment:  
Air Force Comments

Air Force Comments  
On  
DOD IG Draft Audit Report on Air Force Logistics Year 2000 End-to-End test Planning  
(Project 9LD-9024.02)

**Recommendation 1.** We recommend that the AF CIO ensure contingency plans for the five mission-critical systems that were included in Level II end-to-end testing are tested.

**Air Force Response.** Concur. To test Contingency Plans for those systems that participated in the OSD Logistics Level II End-to-End Tests, we used the Chairman of the Joint Chiefs of Staff's Contingency Assessment Positive Response Y2K-4 exercise, which is the Contingency Sustainment Exercise, conducted from 30 August through 3 September. We coordinated this strategy with the OSD Logistics Level II End-to-End Operational Test Coordinator, who agreed that the test would be sufficient for those systems. No major problems surfaced in that series of tests, which did, however, in some cases, lead to improvements in the Plans. In addition, we are testing mission critical system contingency plans as part of the remainder of our Level I tests, and may test other mission critical system Contingency Plans, depending on the coverage and results that we achieve in the remainder of our Level I tests.

**Recommendation 2.** We recommend that the AF CIO determine the status of the three mission-critical systems that have not had higher-level tests, test them as required, and update the DoD Y2K Reporting Database and the Air Force Evaluation Database, as appropriate.

**Air Force Response.** Concur. There appears to be a "time lag" mismatch, between the DoD Y2K Reporting Database and the Air Force Evaluation Database (AFED), that led the DoD IG to believe that there are three systems - Embedded Global Positioning System/Inertial Navigation System (EGI), Global Air Transportation Execution System (GATES), and Improved Maintenance Management Program (IMMP) - that are recorded in the former as mission critical but not being reported in the latter as being tested. In fact, the functionality of EGI has been changed from logistics to weapon system, and it is not date-cognizant and therefore does not need to be tested. GATES, an Air Mobility Command system, is, as the DoD IG pointed out, still under development. Development is scheduled to be complete on 24 September 1999. It is now listed in the AFED, and scheduled to be tested on 11 October 1999 in TRANSCOM OPEVAL C. IMMP is not mission critical and is no longer on a CINC Thin Line list.

We have been working, and are continuing to work, to preclude disconnects between these two databases



**Recommendation 3.** We recommend that the AF CIO develop a risk management plan that includes a risk assessment and mitigation plan for each of the fifteen core logistics processes. The risk management plan should be based on probability of occurrence and consequences of occurrence, and list the mitigation for a particular risk.

**Air Force Response.** Non-concur. The Logistics Capstone Plan for Year 2000 End-to-End Test, prepared by The Deputy Under Secretary of Defense (Logistics), [DUSD (L)], assigns responsibility to lead the development of the Risk Management Plan to the Operational Test Coordinator (OTC) within DUSD (L)/LSM. AF/ILX is the OPR for Air Force inputs to the Risk Management Plan. Additionally, the Capstone Plan requires that the Risk Management Plan be in place as one of the exit criteria for the Level II End-to-End Test process. Level II tests are complete, post test analysis and test report preparation is currently under way. DUSD (L)/LSM estimates that the Risk Management Plan will be in place 1 Nov 99.

Errata: Please place an X at the intersection of the row labeled "AISG" and the column labeled "Wholesale Requisition" in the Table labeled, "Air Force Level II Testing." The AISG connects wholesale level systems to the Defense Automatic Addressing System. Also, please place an X at the intersection of the row labeled "IMWRP" and the column labeled "Retail Requisition." The Item Manager Wholesale Requisition Process (IMWRP) processed retail requisitions placed by the US Navy and the US Marine Corps.

Revised

Revised

Revised

## **Audit Team Members**

The Readiness and Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD, prepared this report. Personnel of the Office of the Inspector General, DoD, who contributed to the report are listed below.

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